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Increasing Long-Term Care Employee Influenza Compliance Through an Educational Approach

ShyAndrea H. Brazil

Jacksonville State University

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Department of Nursing

Chair: Dr. Laura Barrow, Ph.D., MSN, RN

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Dedication

This journey has been quite an adventure and one that I will forever be grateful for. I would like to dedicate this body of work to my family. To my grandmother Susie: may you rest knowing that the work ethic you instilled within me continues to pursue excellence. I pray that I can continue to make you proud. To my husband, Stacy, thank you for your continued love, support, and encouragement. Your willingness to go above and beyond and help in any way-even if it meant you being my simulated patient, will never go unappreciated. To my three beautiful babies: Jordan, Staci, and Brayleigh. You guys have given me the extra push I needed when the road seemed hard to travel. Every accomplishment I make will forever be with each of you in mind. I always want you three to remember-you guys can accomplish anything you can dream of with hard work and perseverance. Your mommy is proof.

Acknowledgments

I can truly say that I have been blessed to become acquainted with some of the most amazing individuals during this journey. This experience has introduced me to many individuals who I can honestly say have become near and dear to my heart. To Dr. Keith-your kind spirit and genuine concern shines through and could never go unnoticed. Your dedication to my growth and your love for nursing was greatly apparent during our interactions. To Dr. Barrow- I appreciate all of your help, guidance, and support. I especially appreciate you for your constant reassurance at times when I found myself second guessing my abilities. I would like to extend a large thank you to my project facility. I am honored to have had the opportunity to help your organization promote change in a positive manner. Lastly, I am grateful for my project mentor Dr. Coley and preceptor Dr. Berry-Cannon. Your willingness to invest your time and energy into my educational endeavors is greatly appreciated. In spite of your other obligations, you were always available as a great resource for me. I hope that I can one day be a blessing to others along their educational journey; as you all have been to me.

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Abstract

Influenza (flu) is a highly contagious respiratory illness caused by several influenza viruses (Centers for Disease Control, 2019). The CDC estimates that there have been approximately 42.9 million flu incidents, 20.1 million flu medical visits, 647,000 flu related hospitalizations and 61,200 deaths from October 1, 2018 through May 4, 2019. Individuals who contract this illness may have symptoms varying from mild to severe. This project focused on the elderly population because these individuals fall into the high-risk category. Individuals 65 and older are more likely to experience flu-related complications, which could ultimately lead to hospitalizations and in some cases, death. It is noted that between 70 and 90 percent of all seasonal flu-related deaths typically occur in individuals 65 years and older (CDC, 2019). These astounding facts led to the PICO question: In rural community living center healthcare workers, how does incorporating educational interventions using evidence-based information on the purpose, risks, efficacy, and side effects of the influenza vaccine, compared to no educational intervention, influence the rate of healthcare professionals opting to have the influenza vaccine for the 2019-2020 influenza season. For this project, this author evaluated the educational interventions and the corresponding outcomes to evaluate the effectiveness of educational interventions with employees. This project focused on incorporating interventions with an overall goal to improve health outcomes for not only the employees but also the residents of the community living center. According to Terhaar and Sylvia (2014), "When the purpose of a data analysis is evaluation, the question (s) are expressed as aims and outcomes". For this reason, the analysis question would be considered an evaluation (Terhaar & Sylvia, pg. 39. 2014).

This project consisted of a four-week influenza campaign with pre and post questionnaires utilized to gauge an employee's influenza knowledge as well as their reported likelihood of

receiving the vaccination. The mean score for the post quiz increased by 8 points when re-administered post-education. Documented employees receiving the vaccination for the 2019-2020 flu season more than doubled with an increase of 25 seen post-education interventions.

Keywords: Influenza, flu campaign, flu, vaccinations, infectious diseases, attitudes, barriers

Increasing Long-Term Care Employee Influenza Compliance Through an Educational Approach

Introduction

Influenza is a respiratory illness with the potential of leading to many serious health complications and in some cases, even death (CDC, 2019). It is a highly contagious illness contributing to thousands of deaths and serious health complications annually. According to statistics from the CDC, the 2017-2018 season was the first season classified as high severity for all age groups. For the 2017-2018 influenza season, it was estimated that 488 million people contracted the flu, 22.7 million went to a health care provider, 959,000 were hospitalized, and 79,400 died as a result of the flu. Influenza can cause serious complications for any individual; but the risk for complications is greatly increased for adults 65 years and older, pregnant women, young children, asthmatics, individuals with HIV/AIDS, cancer, and heart disease. The effects of the flu are often magnified in the vulnerable elderly population as evidenced by the increased complication related deaths. This is primarily because older individuals sometimes have weaker immune systems and lower immune response to the illness (CDC,2019). In this writer's experience, often times individuals choose to remain unvaccinated from the flu because of negative misconceptions and minimal knowledge of the illness. Sadly, this is true for healthcare workers as well. Providing influenza education to staff can provide a double fold benefit. It can encourage the health care worker to get vaccinated and it can also provide the employee with additional information which can be shared with the elderly clients to possibly encourage them to become vaccinated.

Background

In spite of the blatant evidence of influenza severity, there still remains many healthcare workers who decide not to receive the annual vaccination. Many individuals do not realize

choosing not to receive their vaccination could not only put themselves at risk but also put their families and patients at risk as well. Research has proven that the vaccination is safe for administration and effective in reducing both serious hospitalizations and flu related deaths. In spite of the current information, healthcare personnel continue to decline the vaccination. This finding leads one to question why so many individuals continue to make this choice. Is this because of their religious beliefs, their fear of needles, misconceptions, or just a complete lack of flu education? The influenza vaccination is one way that individuals, particularly HCPs, can help reduce the spread of this deadly illness. With all of the known benefits, it was for this reason that this author felt inclined to further investigate reasonings for declinations.

Problem Statement

The CDC highly recommends individuals, such as those working in long-term care facilities, be vaccinated annually to help reduce outbreaks amongst the resident populations (CDC, 2019). Vaccinations are not only important for those individuals coming into direct contact with the patients; but also indirect staff members such as clerical, housekeeping, and administrative staff. For the 2018-2019 flu season, the percentage of HCPs who received flu vaccines was estimated to be 78.4%, with the highest compliance being seen among physicians and lowest seen in nonclinical personnel. HCP vaccination compliance rates for the hospital setting was 91.9% and only 67.4% in long-term care facilities (CDC, 2019). This is alarming because clients in the long-term care facilities are among the listed vulnerable populations. Literature suggests that the higher employee vaccination rates for hospital staff was associated with employer vaccine requirements, employer promotion of vaccinations, and free vaccinations offered at various times (McKnight, 2012).

Perceptions of behavioral control from the organization, risk perception, and prior perceived

negative experiences are all documented reasons for lack of vaccination on the part of HCP (Schmid, P., Rauber, D., & Denker, L., 2017). From this information, the previously mentioned PICO question was developed: In healthcare workers in a rural community living center, how does incorporating educational interventions, providing evidence-based information on the purpose, risks, efficacy and side effects of the influenza vaccine, compared to no educational intervention, influence the rate of healthcare professionals opting to have the influenza vaccine for the 2019-2020 influenza season? This DNP project utilized a pre-questionnaire to evaluate the current perceptions associated with influenza vaccination for the employees at a rural long-term care facility before providing evidence-based information over a 4-week period of time. The pre-questionnaire will also include one question presented in a manner similar to the Likert scale inquiring about the employee's likelihood of receiving the vaccination prior to educational interventions. At the conclusion of the 4-week educational sessions, this author performed a post-questionnaire to gauge any changes in perception and influenza knowledge as evidenced by increases in the quiz scores and increases in the employee's self-reported likelihood of receiving the influenza vaccination. Furthermore, this writer followed up with the project facility frequently throughout the 2019-2020 influenza season to track the rate of employees who followed through with receiving the influenza vaccine.

Organizational Description of Project Site

In the facility of interest, many thousands of dollars are exerted annually due to overtime expenditures associated with flu related sick call-ins. This facility houses over 100 residents who are 65 and older, thereby placing them in a vulnerable population more likely to experience flu related complications. Influenza is highly contagious and can be spread easier in settings such as long-term care units which can lead to massive outbreaks among both the staff and

residents (CDC, 2019). Increased incidence among staff members can result in increased expenditures caused by generated need for overtime and increased likelihood of staff burnout.

Review of the Literature

Influenza vaccination compliance amongst HCP is a serious concern and threat. Until there is a better understanding of what leads to employee declinations at this facility, this is likely to continue to remain a critical issue. Every influenza season, there is a potential increased threat to patients' risk of infections and possible complications (Floyd, 2013). This is especially true for individuals with compromised immunity and increased vulnerability. This risk affects employee and patient health status as well as threatens the operations of healthcare facilities. An initial literature review was completed using ten articles found addressing deterrents in flu vaccination among HCP. More specifically, studies have been completed in attempts to analyze the significant barriers HCP experience when trying to receive their flu vaccination (Schmid, P., Rauber, D., & Denker, L., 2017). From this study, it was identified that lack of confidence, inconvenience, and complacency were trending barriers.

Literature shows that the declining rate of occupational vaccination of health care personnel is due, in part, to employees not seeing vaccinations as a professional responsibility to aid in decreasing health risks posed to both staff and patients alike (Little, K., Goodridge, S., Lewis, H. & Lingard, S., 2014). A cross-sectional study that utilized a survey to explore reasons behind low vaccination rates and to identify potential practical and policy solutions showed that commonly reported reasons for declinations included side-effects, insufficient knowledge, and vaccine effectiveness as the popular justifications for declining flu vaccination (Little, K., Goodridge, S., Lewis, H. & Lingard, S., 2014). This study further revealed that other organizational barriers include inconvenient locations and times for vaccinations and clinics,

with much debate around ethical concerns raised by mandatory vaccinations (Little, K., Goodridge, S., Lewis, H. & Lingard, S., 2014). Results from this study showed that staff education may increase overall vaccination compliance and coverage (Little, K., Goodridge, S., Lewis, H. & Lingard, S., 2014).

In review of numerous studies, the general consensus that influenza vaccination provides direct benefits to both patients and staff members seems clear. With that being said, the question as to why facilities do not mandate vaccination of employees was aroused.

Upon further review, it appeared that mandated vaccinations continue to be a controversial topic (Dubov & Phung, 2015). There are more than 600,000 healthcare related employers in the United States, but only 400 of those organizations have vaccination mandates on a local level (Dubov & Phung, 2015). Many nursing organizations have become vocal in their beliefs that mandatory flu vaccinations violate an individual's right to refuse unwanted treatment (Dubov & Phung, 2015). The lack of support for mandated flu vaccinations was further shown in 2014 when the Massachusetts Nurses Association filed a lawsuit against Boston's Brigham and Women's Hospital with claims that the mandates were invasive and denied healthcare personnel the right to make decisions about their own health (Dubov & Phung, 2015).

Evidence-Based Practice: Verification of Chosen Option

Research has shown that workforces implementing influenza campaigns showed a great increase in compliance for influenza vaccination from 2017-2018 flu season (Johnson, 2019). These studies demonstrated compliance rates increasing from 60 percent to 90 percent respectfully (Johnson, 2019). While there have been increases seen as it relates to employees in hospitals, there remains a disparity in the vaccination rates for long-term care employees. Incorporating educational strategies instead of utilizing flu mandates for employees working in

long-term care facilities was proposed to help change the culture and promote engagement and accountability amongst the staff (Johnson, 2019). Utilizing an evidence-based approach to gauge employee perceptions as it relates to the influenza vaccination, their understanding, and knowledge of influenza, as well as review any negative connotations, was projected to make a positive impact on the rate of vaccination compliance. This author administered a pre-education questionnaire to employees prior to a four-week evidenced based educational campaign increasing influenza awareness. These interventions were followed by a post-education questionnaire. By equipping the staff members with evidence-based influenza knowledge, the projected hypothesis that staff members would be more likely to receive the vaccination was established. It is this author's belief that health promotion is an important aspect to the nursing profession and can be encouraged through education and increasing awareness to not only the patient population but to employees as well.

Theoretical Framework/Evidence-Based Practice Model

When developing a project focused on preventative care, Pender's Health Promotion Model was the framework used as a guide for research and practice. Specifically, this was because this model focuses on three areas: individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes (Sitxman & Eichelberger, 2015). Nola Pender was a professional nurse who noticed early in her career that healthcare professionals were focused on intervening after an illness was present (Sitzman & Eichelberger, 2015). Pender based her model around the idea that being proactive to avoid disease was a better alternative than being reactive after chronic or acute episodic events (Sitzman & Eichelberger, 2015). As literature suggests, elderly individuals in an institutionalized setting are seen as a vulnerable population. When caring for individuals who fall within the vulnerable population, one must

consider all potential risks. As previously stated, one identified preventable risk is influenza (CDC, 2019). Healthcare personnel working in long-term care facilities should be provided education to ensure that they are able to make educated decisions as it pertains to the influenza vaccination. When considering the CDC recommendations, adults age 65 years and older have a higher risk for influenza complications. With this knowledge, one would assume that it would be less likely for a healthcare professional to decline an annual influenza vaccination. Literature shows individuals choose not to be vaccinated because of many reasons. According to the Office of Research and Development, a 2010 survey showed reasons for declination to include: not being able to find a place that had the vaccine, cost of the vaccine, or forgetting to be vaccinated (United States Department of Veterans Affairs, 2014). Other reasons noted included religious affiliations, preconceived notions, and lack of knowledge related to true benefits versus the risks of the influenza vaccination (CDC, 2019). Using evidence-based practices for this project had the potential of resulting in both positive results for staff and an indirect positive impact on residents. Providing influenza education could possibly result in staff feeling more knowledgeable and better able to promote and educate residents on this topic. An individual who does not understand the benefits of an intervention may be a less likely source of influence for the cause. Those statements were relevant when considering the secondary benefits of influenza education and how they greatly intertwine with the health promotion model.

This project will serve to provide a representation that taking proactive interventions in health maintenance is impactful and will create lasting effects to empower individuals to be proactive when handling potential health threats.

Goals, Objectives, and Expected Outcomes

The healthcare professional should focus on seeking ways to translate research into practice by addressing relevant issues. One issue that remains crucial is the compliance rate of influenza vaccination amongst healthcare workers in long-term care facilities (CDC, 2019). This project used an educational approach to help remove barriers that could prevent long-term healthcare personnel from receiving their annual influenza vaccination.

The objectives of this project were to (1) educate staff members about the risks and benefits of receiving an annual influenza vaccination and (2) improve overall understanding of influenza so the staff members are better able to provide education to the residents in this facility. The primary goal was to increase the reported likelihood to receive vaccination during 2019-2020 by at least 10% and an actual compliance rate of employees opting to receive the annual influenza vaccination during the facility flu drive by increasing at least 20% in comparison to the prior year's influenza compliance rates. Employees included in the project included both clinical and non-clinical staff.

Project Design

This author used a quantitative method to facilitate this performance improvement project in collaboration with a long-term care facility. A pre-test questionnaire comprised of 9 true or false questions evaluating general influenza knowledge prior to educational interventions was administered to 75 of the long-term care employees (Appendix B.). This pre-test questionnaire also consisted of one question constructed similar to a Likert scale inquiring about the employee's likelihood of receiving the vaccination. There was also one question included that allowed the participant to provide written feedback outlining their reasonings for refusing the vaccination as well as two additional questions asking about historical influenza vaccination

information. The post-quiz questionnaire was the same as the pre-questionnaire with the exception of the historical questions being excluded (Appendix C.). The questionnaires were developed to include basic questions to garner more information about the participants' perceptions of the vaccination, basic understanding of the risks and benefits, past immunization history, and likelihood of receiving the vaccination this flu season. This writer utilized evidence-based practice methods to provide face to face educational information to the employees one on one over a four-week period following the initial educational in-service. In an effort to meet various educational needs, various presentation methods to include power-point presentations, educational in-services, pamphlets, and one on one sessions was utilized. After the four-week educational sessions, writer administered the post survey to evaluate the effectiveness of the combined interventions.

Project Site and Population

This project took place in a long-term care facility located in the Southeastern United States. Recent population census reports an estimate of 198,218 residents (United States Census Bureau, 2018). It has been providing long-term care nursing home services since 1980 and receives both Medicare and Medicaid reimbursements (Huffman, 2019). The facility is a 121 bed for profit corporate owned entity. Current staffing includes approximately eighty employees with roles ranging from nurse practitioners, registered nurses, licensed practical nurses, nursing assistants, administrators, housekeeping, and dietary staff. This facility provides both medical and personal care to residents who are unable to manage independently within the community (CDC, 2019). Clinical staff working in this facility provide 24-hour services to the residents with clinical staff working shifts to include day, evening, nights, weekends, and holidays. Residents are assisted with activities of daily living, medication management, rehabilitation, and leisure

activities, with a focus on helping increase the resident's quality of life in a safe and therapeutic milieu. Mean age for residents in this facility is 65 years of age and older.

Employees with a history of severe allergic reactions to the flu vaccine or any component of the vaccine as well as employees who have experienced Guillain-Barre syndrome within 6 weeks will be excluded from this study (CDC, 2019). All other employees who are over the age of 18 will be included in this project.

Setting facilitators and barriers

The administrator was fully supportive of this performance improvement project. The facility leadership staff members understood the importance of influenza vaccinations and were impressed with the potential positive impacts that this project could have on the facility. For those reasons, leadership worked hard to support this endeavor.

After discussion of the project goals and potential benefits, the administrator opted to make attendance of the educational in-services mandatory as a facility educational requirement. During project meetings, he voiced that this facility had experienced a high turnover rate within the last six to eight months. This turnover rate left the facility with insufficient staff on many occasions resulting in staff members feeling overwhelmed due to the long hours required to meet minimal staffing requirements. The administrator also shared that while educational efforts were important, it had been very difficult to focus on education when the facility education staff member had to place more attention toward assisting with providing coverage of daily clinical duties over the last four-week time period. During the time of project implementation, the facility had been placed in somewhat of a survival mode and their main focus was ensuring that the residents were safely and appropriately cared for.

Staffing issues resulted in decreased morale and increased frustration amongst the staff. The facility underwent two changes in ownership within the last 3 years leaving many employees cautious of their interactions with unfamiliar individuals. For this reason, staff members were initially unreceptive to this author's presence. During initial interactions, the environment was tense and staff members were not open to discuss influenza education. In efforts to garner more participation from the employees, this writer interacted with staff on the unit to build a positive rapport and positive working relationships. This proved beneficial with employees feeling more free to ask questions and provide honest personal experiences.

During the initial meeting with the Director of Nursing, she was ecstatic about working to implement a project that would increase the compliance rate of employees receiving influenza vaccinations. She relayed that prior to this author's clinical experience with the facility, the education specialist was away from the facility on extended medical leave. She noted that during the education specialist's extended leave, administrative staff failed to place the bulk order of flu vaccines for the in-house free flu drive. This oversight resulted in delays of the vaccination being available to staff. The vaccination was not immediately available to staff members following implementation of the educational sessions. She further expressed that last year only ten of eighty employees opted to receive the influenza vaccination. She explained that many of the staff members voiced concerns that the flu shot would make them sick or they simply stated they did not wish to have it completed. This information further validated that this facility could greatly benefit from this performance improvement project.

This author took all responsibility for organizing and facilitating educational sessions for the staff members. This proved beneficial for the facility because it helped them meet their

annual staff educational requirements. This writer also incorporated light refreshments and inexpensive door prizes to create a less formal feel for the educational sessions.

After project implementation, there were several challenges this writer experienced causing issues with data collection. After implementation and completion of the educational interventions, the administrator for this facility terminated his employment causing some delays and difficulties in retrieving vaccination compliance records for the 2019-2020 flu season. In March of 2020, Alabama was drastically affected by pandemic COVID-19. COVID-19 also known as Coronovirus, is a highly infectious disease caused by a newly discovered coronavirus. Individuals infected with coronavirus can experience mild to moderate respiratory illnesses and recover without intervention. Whereas, older individuals and those with underlying conditions can develop more serious degrees of the illness (World Health Organization, 2020). The facility was again placed in survival mode with all efforts focused on staffing and providing needed care to their residents. This in turn made project associated communication with the facility difficult.

Implementation Plan/Procedures

A quality improvement educational project to improve long-term care employee compliance with influenza vaccination rates was implemented at a metropolitan long-term care facility in the southeastern region of the United States. A project description was submitted to Jacksonville State University Institutional Review Board (IRB) and approved in September 2019 (Appendix D.). The facility in which this project was implemented did not have an existing IRB process. Approval to implement the DNP project was obtained from the institution's administrator. This writer completed an unofficial survey of the facility intermingling with staff members to help create a positive rapport in September 2019. 75 employees who did not meet the exclusionary criteria detailed previously, participated in the pre-educational questionnaire. The initial

influenza in-service was completed on October 4, 2019 with two sessions offered to accommodate all three work tours. Over a 4-week period, staff underwent additional education in the form of power point presentations centered around evidence-based studies and practices and one on one educational sessions. This author also utilized pamphlets and educational posters from the Centers for Disease Control as visual reinforcements. Writer initially intended to decorate bulletin boards as a fun and simple means of communicating educational material; but did not do so due to time constraints.

At the completion of the 4-week period on October 24, 2019, writer administered a post-education questionnaire that re-evaluated the staff member's knowledge of influenza information and their reported likelihood of receiving the vaccination.

Measurement Instruments

In order to measure the outcomes of this DNP project, this writer evaluated the pre and post scores for the questionnaires. The eleven-question pre-survey was administered at the beginning of project implementation prior to any educational interventions. The survey questionnaire consisted of nine true or false questions, one question using a similar to the Likert scale, and one question that allowed employees to free hand write their response. At the completion of the four-week educational program, the eleven-question survey was re-administered with the post educational questionnaire results compared to the pre-educational questionnaire scores. To further measure the overall success of this project, writer collaborated with the facility education nurse to evaluate the number of employees who received the flu vaccination from October 2019 and compare that data to the influenza vaccination results from the 2018-2019 influenza season.

Data Collection Procedures

The eleven question pre and post surveys were administered to all staff members who did not meet the exclusionary criteria at pre and post educational intervention intervals. The survey questionnaires aimed to provide the writer with greater insight into the employee's personal perceptions, biases, and general knowledge about influenza vaccinations as well as any changes that occurred as a result of the educational interventions. The individual quizzes were scored with the results forwarded to a statistician to evaluate for any statistical significance. Additionally, this author communicated with the facility leadership to gain real-time monitoring for the compliance rate of staff members either receiving the vaccination at the facility or individuals providing proof of vaccination from an outside source.

Data Analysis

Data collected for this project was evaluated using a sample t-test with a 95% confidence interval model to determine if there was a significant difference between the means of the pre and post-test for questions 1-9 (Corty, 2016). As previously mentioned, questions 1-9 were true or false and pertained to general influenza knowledge. A separate t-test with a 95% confidence interval was performed on the pre and post test data for question 10. Question 10 pertained to the staff member's reported likelihood of receiving the influenza vaccination prior to and after the four-week educational interventions. The writer expected to perform a quantitative analysis to compare influenza vaccination compliance rates for staff members during the 2018-2019 flu season in comparison to the 2019-2020 flu season. This was not completely accomplished as it was determined that in order to show statistical significance, monitoring facility influenza compliance would need to continue over future influenza seasons to come.

Results

The compiled data from pre and post questionnaires as well as the reported employee influenza vaccination compliance for the 2019-2020 flu season was forwarded to the statistician in March 2020. T-Tests and confidence intervals were completed for the 9 true false questions with a separate T-Test and confidence interval completed for question ten which was similar to a Likert scale question. Questions 1-9 were evaluated to see if there had been an increase in overall scores post education which would suggest that the educational interventions were beneficial. Evaluation of question 10 was completed in an effort to evaluate the employees' self-reported likelihood to receive the vaccination prior to and after educational interventions.

Statistical analysis showed a mean pre-education score of 70% with a post-education mean score of 78% (Appendix E.). The likelihood of receiving the vaccine according to participants' response to question 9 mean pre-education score was 54% with a post-education mean score of 67%. The facility liaison reported 36 employees who received the flu vaccination for the 2019-2020 flu season. Using a 95% confidence interval, the hypothesis that educational interventions would increase influenza knowledge showed a confidence interval of 4.5%. Likewise, using a 95% confidence interval, the hypothesis that educational interventions would increase the participants' reported likelihood of receiving the vaccination showed a confidence interval of 2.6%.

Interpretation/Discussion

The statistical results show evidence that this quality improvement project rendered positive benefits as it relates to implementing an educational influenza campaign. There was an 8% increase in overall scores for questions 1-9 which evaluated the participant's influenza knowledge. There was also a 13% increase in the participant's self-reported likelihood of

receiving the influenza vaccination after participation in this project. Furthermore, there was an increase in 25 employees successfully receiving the vaccination for the 2019-2020 flu season in comparison to the prior flu season.

Using the 95% confidence interval in relation to questions 1-9, the true mean would be between 70 and 78%. Whereas 4.5% of the time, it would not fall within this range. Likewise, when using the 95% confidence interval for question 10, the true mean would fall between 54% and 67% as it relates to the participant's self-reported likelihood of receiving the influenza vaccination. Whereas, 2.6% of the time, it will fall outside this range. With the above-mentioned confidence intervals, one can conclude that the changes post-education were not random and indeed showed statistical significance. While there was an increase in employees opting to receive the vaccination for the 2019-2020 flu season, a longer study interval would be needed to determine if this represented true significance.

Cost-Benefit Analysis/Budget

Literature shows that seasonal influenza poses a large economic burden in the United States with an estimated average annual direct medical cost of 3.2 billion and indirect costs totaling 8.0 billion dollars (Wayan, 2018). According to the 2003 US population, projected lost earnings due to illness and loss of life amounted to 16.3 billion dollars annually with a total economic burden of annual influenza epidemics using projected statistical life values amounting to 87.1 billion dollars (Molinari, 2007). While the data shows that hospitalization costs contribute to expended funds, loss of productivity from missed workdays and lost lives comprise the bulk of the economic burden of influenza (Molinari, 2007).

When evaluating costs associated with employee underperformance due to illnesses, sickness, and presenteeism was considered. Sickness presenteeism is a behavior in which an employee is

physically present at work with reduced performance due to illness or other reasons (Lui, Andres & Johnston, 2018). Costs associated with sickness presenteeism productivity loss ranged from USD $2000-15,541 per healthcare employee annually (Lui, Andres & Johnston, 2018). Overall, associated sickness presenteeism productivity daily costs (USD 340/day) were lower than sickness absenteeism costs (USD $463/day) (Lui, Andres & Johnston, 2018). A similar study showed an estimated average cost of USD $246.76 per day of work loss for healthcare workers due to influenza associated illness (Meijboom, Riphagen-Dalhuisen & Hak, 2018). Whereas, costs associated with the immunization program and vaccine efficacy were estimated at approximately USD $16.39 per staff member which included the cost of the vaccine (approximately USD $5.46) (Meijboom, Riphagen-Dalhuisen & Hak, 2018).

Increasing influenza compliance rates will be of great benefit to this long-term care facility. According to statistics, many employees exhaust sick days due to flu related illness, thus causing increased overtime expenditures for the facility (Schmid, Rauber, Denker, 2017). As stated by the CDC, unless a contraindication exists, all individuals over the age of 6 months can benefit from the administration of the flu vaccination (CDC, 2019). Elderly individuals are considered a vulnerable population and may benefit both directly and indirectly from staff members have a better understanding of the flu vaccination. Staff members increasing their knowledge of the benefits of the vaccination as well as dispelling any negative preconceived notions may also allow them to better provide educational information to their residents. By providing the residents with accurate education, the residents may be more likely to opt to have the vaccination completed.

Timeline

The proposed timeline for actualization to this DNP project was strict and required prompt submission to allow greatest impact during the 2019-2020 flu season. (See Appendix D.) This writer established the project PICO question in May 2018. Between the months of May and July 2019, the research process began with writer initiating completion of the manuscript document. This author obtained a preceptor and project site in July 2019. The Institutional Review Board Packet was submitted to the educational institution and project facility in September of 2019 to allow project implementation in October 2019.

In keeping with the strict timeline required for this project, this author met with the facility administrator to further discuss the plan of action for this performance improvement project. After conversations with facility administrator and education coordinator, this author completed informal rounding with leadership as an introductory mechanism to build rapport with staff members prior to the first educational session. Flyers announcing mandatory influenza vaccination for the initial session were delivered and posted on the units on September 1, 2019. This DNP project was officially implemented on October 3rd, 2019 with the first educational session and pretest facilitated by writer. There was a morning session to accommodate day and night shift and a second session to accommodate evening shift staff members. Educational program spanned over a four-week period with the author providing one-on-one education to staff members one hour, one day per week. The facility received influenza vaccines October 15, 2019, to be administered to staff opting to have vaccinations completed.

The post-education session was completed on October 24th, 2019. Again, there were two sessions to accommodate the varying shifts. There were forty participants for the morning session and thirty-five participants for the afternoon session. Post-questionnaires were

completed on a voluntary basis by participants with results collected and reviewed by author. This author reviewed results of both the pre and post questionnaires in preparation for submission to the statistician for further interpretation. This author continued communication with administrative staff bi-weekly to track vaccinations and declinations received for individuals who attended the educational session. This facility was placed on a preventative lockdown in response to the COVID-19 pandemic in March 2019. Final data from the facility was received in April 2020 with all data forwarded to statistician for statistical calculations. Project results were provided by statistician in May 2020 with final results presented to this writer's preceptor June 2020.

Ethical Considerations/Protection of Human Subjects

The Jacksonville State University Institutional Review Board (IRB) approval was obtained before initiating this DNP project. The influenza educational sessions were facilitated by writer as a mandate by the employer. Participants were made aware both verbally and in writing that completing the pre and post questionnaires was voluntary and refusal to participate would not affect their terms of employment. There were no risks to the participants associated with this performance improvement project.

Conclusion

As outlined throughout this research experience, flu vaccination compliance among healthcare workers remains an ongoing issue and potential infection control concern for both employees and patients. While mandating vaccinations for healthcare workers has been introduced as an option to increase vaccination compliance, mandates bring forth new ethical concerns and debates. Research has shown that many individuals choose not to have flu vaccinations completed because of varying reasons to include misconceptions and personal

beliefs (CDC, 2019). The subjects who participated in this study demonstrated many biases that were identified early on during literature review. The educational interventions and the improvement in the post-education scoring showed that education can provide positive results. The results from this project support the hypothesis that an educational flu campaign may yield great benefits. As a nursing professional, prevention is a large component of the care one provides to their patient. Continuing to grow this educational endeavor can serve as a means to continue to lead proactive and not reactive practices. Our identified vulnerable populations are worth the continued efforts.

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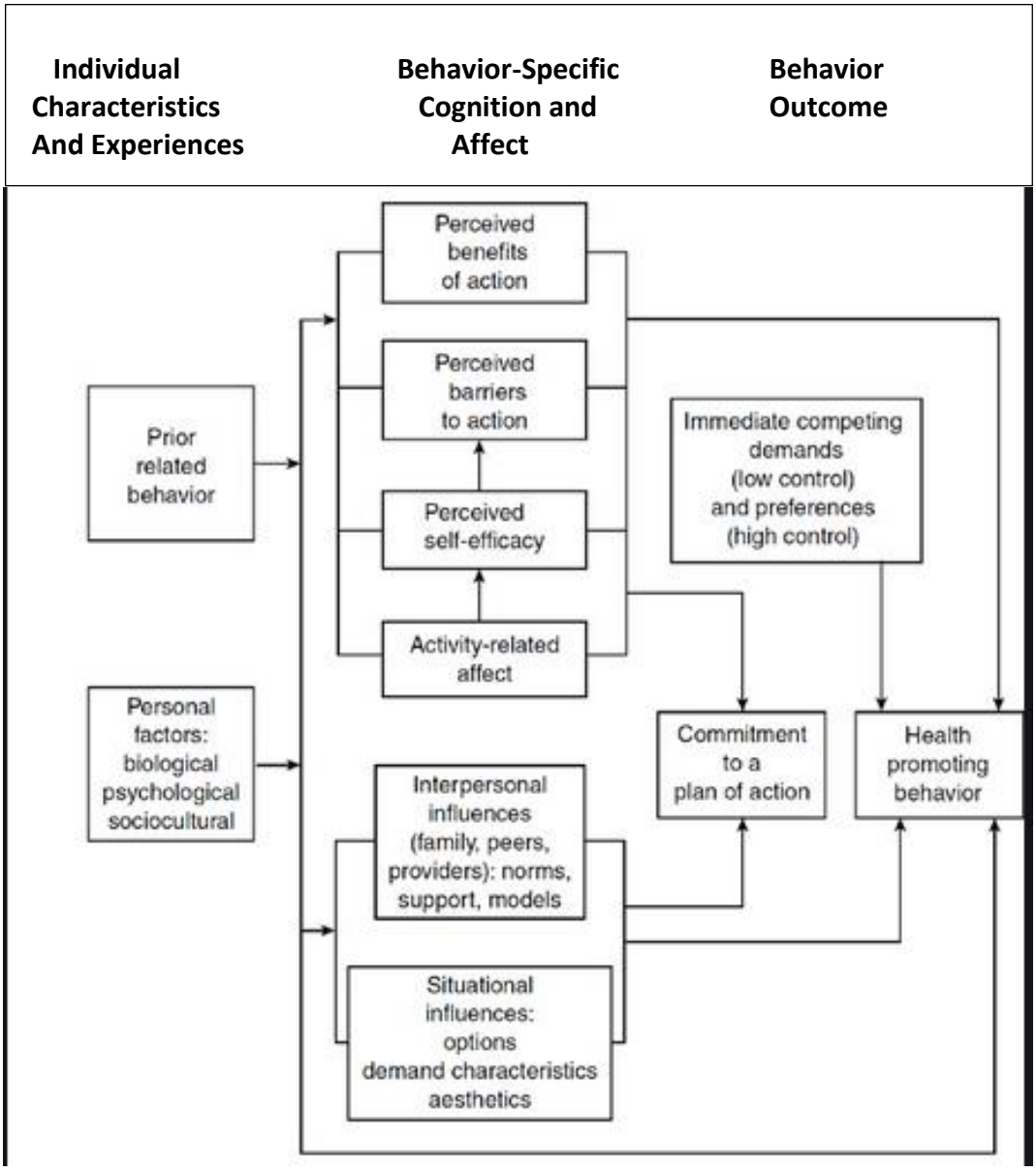
Appendix A.

Pender's Health Promotion Model



(Pender, Murdaugh, & Parsons, 2002)

Appendix B.

Pre-Education Questionnaire

Influenza General Knowledge Pre-Questionnaire

Note to participants: Your participation in completing this survey is voluntary and will in no way impact your employment status. Please do not include any personally identifiable information (name) on this questionnaire.

	True	False
1. A person can contract the flu from the Influenza Vaccination?		
2. Influenza is **NOT** a serious illness.		
3. The flu virus changes all the time.		
4. Antibiotics can help with the flu.		
5. A person cannot spread the flu virus before symptoms become apparent.		
6. Healthcare professionals are more susceptible to being exposed to the influenza virus than the common population.		
7. Residents in nursing home facilities are considered in the high-risk groups.		
8. Getting too cold or wet can make a person more prone to influenza.		
9. If a person is allergic to eggs, they **CANNNOT** receive the influenza vaccination.		
10. On a scale of 0 to 10 with 10 being most likely and 0 being not likely at all, how likely are you to receive the influenza vaccination this flu season?	0 1 2 3 4 5 6 7 8 9 10	
11. Are there any specific reasons you choose not to receive the flu vaccine? (i.e. cultural reasons, allergies, etc.)	**Please Explain:** _____ _____	
Historical Influenza Vaccination Information		
1. Have you ever received the Influenza Vaccination?	Yes	No
If yes, when is the last time you received the vaccination?	_____ **years**	
2. Have you been diagnosed with the flu virus within the past three years	Yes	no

Would you like to provide any other thoughts, concerns, or questions pertaining to the Influenza virus or Vaccination?

_____

_____

_____

Your participation is greatly appreciated!

Appendix C.

Post-Education Questionnaire

Influenza General Knowledge Post-Questionnaire

Note to participants: Your participation in completing this survey is voluntary and will in no way impact your employment status. Please do not include any personally identifiable information (name) on this questionnaire.

	True	False
1. A person can contract the flu from the Influenza Vaccination?		
2. Influenza is **NOT** a serious illness.		
3. The flu virus changes all the time.		
4. Antibiotics can help with the flu.		
5. A person cannot spread the flu virus before symptoms become apparent.		
6. Healthcare professionals are more susceptible to being exposed to the influenza virus than the common population.		
7. Residents in nursing home facilities are considered in the high-risk groups.		
8. Getting too cold or wet can make a person more prone to influenza.		
9. If a person is allergic to eggs, they **CANNNOT** receive the influenza vaccination.		
10. On a scale of 0 to 10 with 10 being most likely and 0 being not likely at all, how likely are you to receive the influenza vaccination this flu season?	0 1 2 3 4 5 6 7 8 9 10	
11. Are there any specific reasons you choose not to receive the flu vaccine? (i.e. cultural reasons, allergies, etc.)	**Please Explain:** _____ _____	
12. Would you please rate your experience with this education experience? On a scale of 0 to 10 with 0 being not a good experience and 10 being a great experience.	0 1 2 3 4 5 6 7 8 9 10	

Would you like to provide any other thoughts, concerns, or questions pertaining to the Influenza virus or Vaccination?

_____
_____
_____
_____

Your participation is greatly appreciated!

Appendix D.

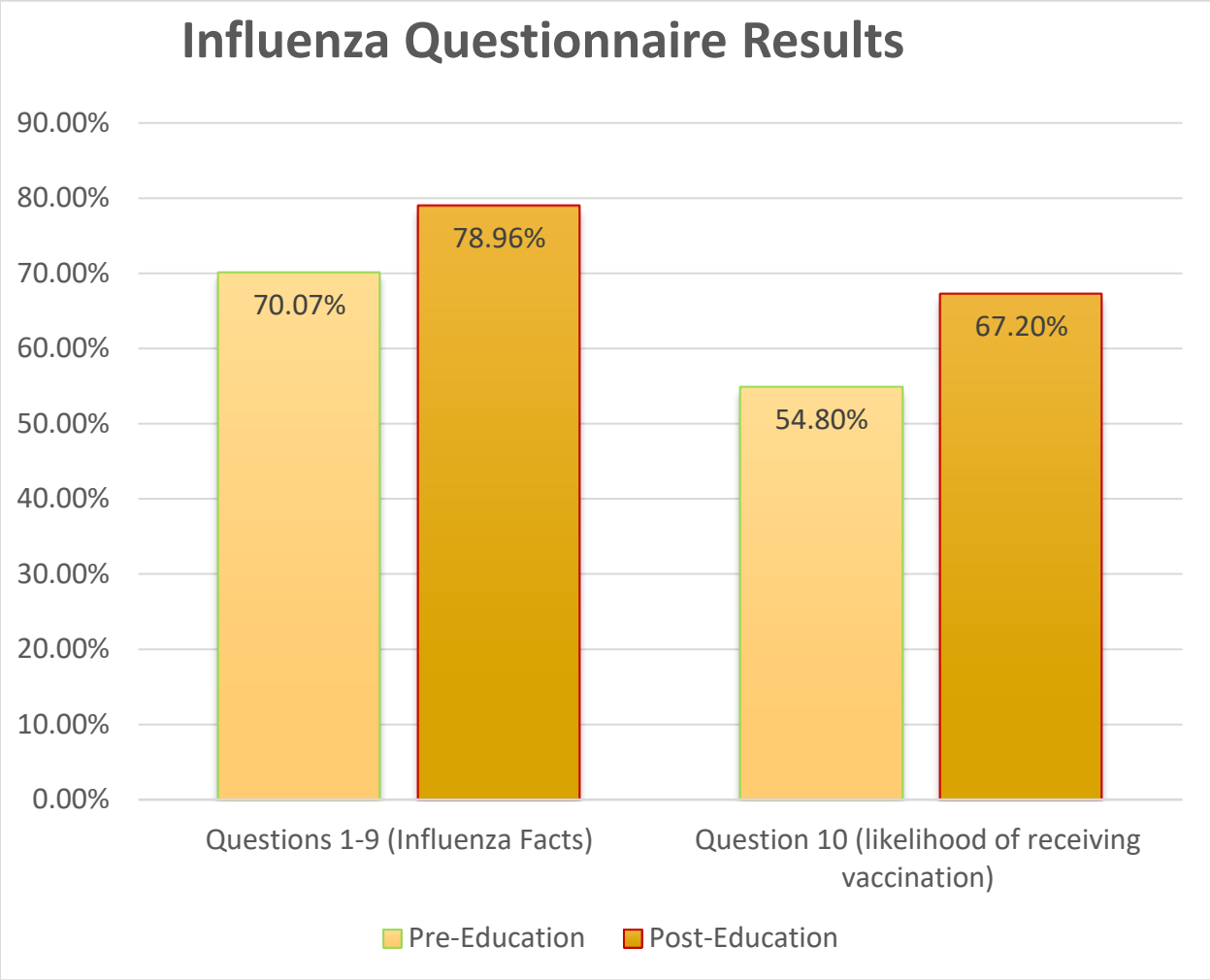
DNP Project Timeline

Timeframe	Tasks
May 2018	o **May 18:** Established PICO Question o **May 21:** Began Project Research o **May 23:** Began working on manuscript
July 2019	o **July 8:** Meeting with potential preceptor/potential project site o **July 9:** Obtained Project site approval and secure preceptor
August 2019	o **August 5:** Meeting w/preceptor to discuss project implementation o **August 7:** Began working on project educational material o **August 8:** Began working on IRB paperwork
September 2019	o **September 8:** Project education material finalized and printed. o **September 17:** IRB paperwork submitted o **September 19:** IRB approved
October 2019	o **October 3:** Initial Pre-Education Employee In-Services (2) o **Oct 4-23rd:** Weekly 1-hour face to face individual employee education o **October 15:** Facility receives flu vaccinations in-house o **October 24:** Post education Employee In-Services (2)
November 2019	o Continued supportive literature review

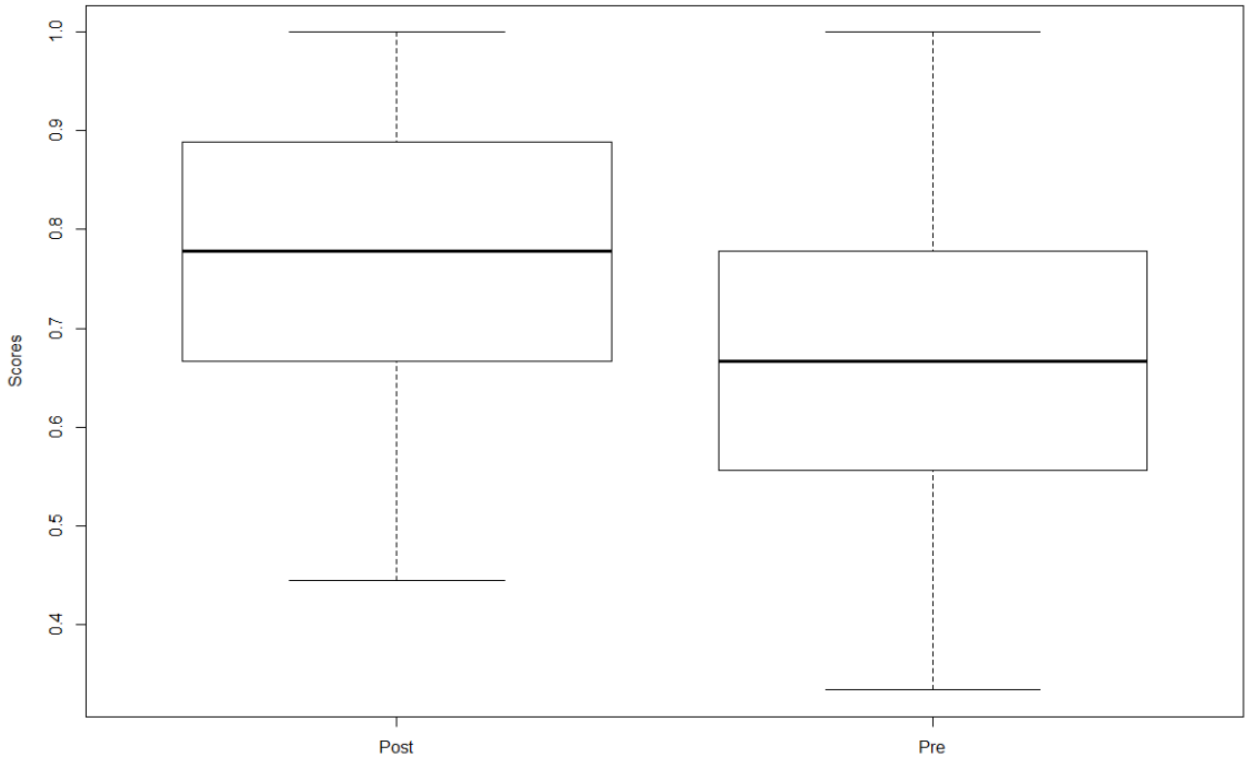
	○ Continued working on project manuscript sample ○ Bi-weekly phone meetings with Project facility Education staff for staff
December 2019	○ Continued supportive literature review ○ Continued working on project manuscript sample ○ Bi-weekly phone meetings with Project facility Education staff for staff
January 2020	○ Continued working on project manuscript sample ○ Bi-weekly phone meetings with Project facility Education staff for staff
February 2020	○ **February 2:** Email correspondence with potential statistician. ○ **February 20:** Secured project statistician
March 2020	○ **March 14:** Project facility placed on visitation restrictions due to COVID-19.
April 2020	○ **April 12:** Final phone meeting with project site staff to discuss final employee flu compliance data.
May 2020	○ **May 15:** Meeting with statistician to discuss statistical results. ○ **May 19:** Project Power point presentation finalized ○ **May 30:** Project Poster draft finalized
June 2020	○ **June 3:**Project results and presentation presented to Preceptor.

- **June 4:** Project poster and Project Power-Point draft forwarded to Project Chair
- **June 12:** Finalized Project Poster
- **June 15:** Finalized narrated Project Power Point Presentation
- **June 16:** Project Manuscript draft forwarded to Project Chair for review

Appendix E.


Influenza Questionnaire Results
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
70.07%
78.96%
54.80%
67.20%
Questions 1-9 (Influenza Facts)
Question 10 (likelihood of receiving vaccination)
Pre-Education
Post-Education

Questions 1-9 (Influenza Facts)



Question 10 (Likelihood of Receiving Flu Vaccine)